inflow port. Regarding the reference character "512" of figure 15E, Applicant proposes deleting that reference character as indicated in red on the enclosed marked-up sheet.

Item 3 of the Office Action

The drawings have been objected to for failing to comply with 37 CFR 1.85(p)(5). Regarding reference characters "31" and "26" of figure 5A, Applicant proposes deleting those reference characters as indicated in red on the enclosed marked-up sheet. Regarding reference character "40b", Applicant proposes deleting the "b" from the character as indicated in red on the enclosed marked-up sheet. Regarding the character "OA" of figure 9, Applicant was unable to identify a character "OA". Perhaps, the Examiner was referring to the character "50a", which is sufficiently described in the specification (e.g., pages 15 and 16). Regarding the characters "108a", "108b", and "108c", Applicant proposes adding those characters to figure 10A as indicated in red on the enclosed marked-up sheet.

Item 4 of the Office Action

Applicant also respectfully requests deferral of formal drawings incorporating the proposed changes until the application is allowed.

Items 5-6 of the Office Action - Priority Claim

The specification has been objected to regarding the priority claim. Although Applicant respectfully disagrees with the Examiner that the specification must contain a specific reference to the prior application since the Application Data Sheet, as originally filed, correctly identified the priority applications, Applicant has amended the specification as set forth above, and respectfully submits that the objection has been overcome.

Item 7 of the Office Action - Informalities

Regarding 7a, Applicant has amended the specification at page 13, line 13 to indicate that the lid is referred to by number "22".

Regarding 7b, Applicant has amended the specification at page 21, line 22 to indicate that the apparatus is "10b".

Regarding 7c, Applicant has amended the specification at page 22, lines 25-27 to refer to base "150".

Regarding 7d, Applicant has amended the specification at least at page 24, line 25, and page 27, line 21 to correct the spelling errors. Applicant has reviewed the remainder of the specification and believes that all of the inadvertent spelling errors have been addressed.

Regarding 7e, Applicant has amended the specification to delete the term "etc...".

Regarding 7f, Applicant has amended the specification to replace the references to the Appendices to the references to the Tables, as set forth above. Replacement figures with the Tables are enclosed herewith. No new matter has been added.

Items 8-9 of the Office Action - Claim Rejections Under 35 U.S.C. § 112

Claims 1-7 and 67 have been rejected under 35 U.S.C. § 112, second paragraph as allegedly indefinite. Applicant has amended claims 1, 5, 7, and 67 as set forth above, and Applicant respectfully submits that the amendments are sufficient to overcome the

rejection. In addition, Applicant respectfully submits that claims 68-78 are sufficiently definite to overcome the § 112, second paragraph rejections.

Items 10-11 of the Office Action - Claim Rejections Under 35 U.S.C. § 102

Claims 1-6 have been rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Root et al. (U.S. Patent No. 4,948,564).

Applicant has amended the claims as set forth above, and respectfully traverses the rejection as it relates to the amended and new claims presented herewith.

Root does not disclose each and every element recited in the claims, and therefore, Root does not anticipate the claims. For example, Root does not disclose an edge bounding a sample port that extends from the surface of the lid away from the cavity of the base (claim 1); Root does not disclose a rim extending from the cover away from the filtrate receiving vessel (claim 68); and Root does not disclose nested membrane modules wherein the receiving cavity of at least one of the membrane modules comprises a plurality of concentric rings of a hard material and an elastomeric material (claim 78). In addition, Applicant respectfully submits that Root fails to disclose the subject matter recited in the claims dependent from claim 1 or claim 68. Thus, Applicant respectfully submits that the claims are not anticipated by Root, and submits that the rejection has been overcome.

Items 12-15 of the Office Action - Claim Rejections Under 35 U.S.C. § 103

Claims 7 and 67 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Root et al. in view of Clarke et al. (U.S. Patent No. 4,904,394) [sic]. The Office Action states that it would have been obvious to one skilled in the art to provide the apparatus of Root with a membrane and membrane components, as taught by Sanadi in order to

prevent cross-contamination of samples and to substantially isolate contaminations (Office Action, page 8).

As a preliminary matter, Applicant notes that the initial rejection is based on a combination of Root in view of Clarke; however, the detailed rejection is based on Root in view of Sanadi (U.S. Patent No. 5,342,581). Applicant understands, based on the April 15, 2002 telephonic conference between Examiner Tran and Applicant's representative, Greg S. Hollrigel, the Examiner had meant to state that claims 7 and 67 were rejected over the combination or Root in view of Sanadi. Accordingly, Applicant addresses the rejection of claims 7 and 67 as they relate to the combination of Root and Sanadi.

Applicant has amended the claims as set forth above, and respectfully traverses the rejection as it relates to the amended and new claims presented herewith.

Although the Examiner states that it would be obvious to combine the prior art references, the Examiner has failed to specifically indicate where in the prior art a suggestion or motivation is provided to make the combination. "Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form, must nevertheless be clear and particular." (In re Dembiscak, 175 F.3d 994, 999 (CAFC) 1999) (emphasis ours). Absent such a clear and particular showing, the rejections cannot be maintained, and should be withdrawn.

In addition, "as a general rule, references that teach away cannot serve to create a prima facie case of obviousness." (McGinley v. Franklin Sports, Inc. CAFC 8/21/01 citing In re Gurley, 31 USPQ2d 1131, (Fed. Cir. 1994)).

It also appears that in rejecting the claims based on the combination of Root in view of Sanadi, the Examiner has disregarded the teachings of the primary reference, Root.

The references must be interpreted as a whole, and cannot be picked apart to deprecate an invention (In re Fine, 837 F.2d 1071, 1075, (Fed. Cir. 1988)).

Applicant respectfully submits that Root actually **teaches away** from the combination proposed by the Examiner, and accordingly, one skilled in the art would not be motivated to combine the teachings of Sanadi with Root.

Root teaches reducing contamination among sample wells by inserting the sample wells having a filter on one end into a receiving well of a cover. For example, Root discloses a cover 64 for a base 62. The cover 64 has a plurality of wells 80 disposed within the cover. Wells 80 are structured to receive a single well 20 having one membrane 34 attached at one end. Membrane wells 20 are inserted into wells 80. Membrane wells 20 are either left uncovered, or are covered by manifold cover 202 that permits the air pressure to be increased above the single filters 34.

Sanadi teaches providing a chamber 216 with a gasket 204 disposed between chamber 216 and filter 228. Gasket 204 acts to provide a barrier between chambers that are provided on a uniform flat surface 192.

Providing a gasket between a filter and the bottom of a receiving well, as disclosed by Sanadi, with the membrane wells 20 of Root would actually increase the likelihood of contamination between wells, and therefore, one skilled in the art would not be motivated to make the combination. In particular, an additional gasket disposed under a filter (such as filter 34 of Root, would decrease the physical distance between filter 34 and the top surface 82 of cover 64. Decreasing that distance increases the likelihood that fluid material flowing through the filter will likely come into contact with the fluid material of the other wells. Decreasing the distance is contrary to the teachings of Root, which is trying to minimize contamination by placing the filter 34 deep into well 80 of cover 64. In order for

membrane wells 20 to be properly isolated, the wells must be inserted into the recesses 80 in cover 64 (column 5, lines 38-44).

Because Root teaches away from the combination with Sanadi, Applicant respectfully submits that one skilled in the art would not be motivated to make the combination, and thus, it would not be obvious to combine the two references. Accordingly, the rejection under 35 U.S.C. § 103(a) has been overcome.

The above amendments and remarks are believed sufficient to address all of the issues raised in the Office Action. The Examiner is encouraged to contact the undersigned by telephone if there is any further hindrance to allowance of the present application.

Respectfully submitted,
STOUT, UXA, BUYAN & MULLINS, LLP

Date: April 18, 2002

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, U.S. Patent and Trademark Office, Washington, DC 20231, on August 25, 1999.

Dated: April 18, 2002 By: _____
Francine Sanders, Assistant

APPENDIX SETTING FORTH MARKED-UP COPY OF SPECIFICATION

The following heading and paragraph has been inserted before the paragraph beginning at page 1, line 4:

RELATED APPLICATIONS

The present application is a continuation of United States Patent Application Serial No. 09/183,157, filed October 30, 1998, now abandoned, which is a continuation of United States Patent Application Serial No. 09/058,238, filed April 9, 1998, now abandoned, which is a continuation-in-part of United States Patent Application Serial No. 08/723,636, filed October 2, 1996, now U.S. Patent No. 5,958,714, and which claims priority to United States Provisional Patent Application Serial No. 60/063,038, filed on October 22, 1997, the entire disclosures of which are expressly incorporated herein by reference.

The heading and paragraph beginning at page 1, line 22 have been deleted.

The paragraph beginning at page 4, line 3 has been amended as follows:

Further in accordance with the invention, there are provided systems and test kits as listed in [Appendix I] TABLE I. The systems and test kits comprise specific membrane(s), preparation reagent(s), eluant(s) (if necessary) and analytical reagent(s) for use in connection with the above-summarized apparatus, in determining specific analyte(s) in specific types of matrices.

The paragraph beginning at page 4, line 8 has been amended as follows:

Still further in accordance with the invention, there are provided certain novel chemical tests for histamine, sulfite and/or bisulfite, free fatty acids, and lipid peroxides, as detailed herein and shown in [Appendix I] TABLE I.

The heading at page 6, line 17 and the paragraph beginning at page 6, line 18 have been deleted.

The paragraph beginning at page 6, line 20 has been amended as follows:

[Appendix I] Figures 18A-18I depicts TABLE I [is a table] listing a number of preferred test methods/kits of the present invention.

The paragraph beginning at page 6, line 22 has been amended as follows:

[Appendix II] Figure 19 shows TABLE II, which is a key to the acronyms used to designate specific membranes, reagents, and substances in [the table of Appendix I] TABLE I of Figures 18A-18I.

The paragraph beginning at page 6, line 24 has been amended as follows:

[Appendix III] Figure 20 shows TABLE III [is a table] listing commercially available membranes useable in the test methods/kits of [Appendix I] TABLE I.

The paragraph beginning at page 6, line 26 has been amended as follows:

[Appendix IV] Figure 21 shows TABLE IV [is a table] listing algorithms which are useable in conjunction with certain test kit & methods of the present invention to predict

or discern certain parameters, such as shelf life, presence of contaminants, potential for oxidative degradation, etc, in accordance with the general method diagram of Figure 4.

The paragraph beginning at page 13, line 7 has been amended as follows:

Figures [4-16] 5-16 show various embodiments of apparatus which are useable to perform the analytical methods of applicant's invention. Set forth herebelow are detailed descriptions of each of the exemplary embodiments shown in the drawings.

The paragraph beginning at page 13, line 11 has been amended as follows:

Referring to Figures [4-9] 5-9, the first embodiment of the test apparatus 10 generally comprises the following components: a) a vacuum base 16, b) a test tube rack 14, c) a cover 12, d) membrane module(s) 18, 20, and e) lids [24] 22. As described in the following paragraphs, these components of the apparatus 10 are configured and constructed to be assembled and disassembled in a particular manner to facilitate the performance of analytical tests in accordance with applicant's above-described methodologies.

The paragraph beginning at page 13, line 18 has been amended as follows:

The vacuum base 16 comprises a housing having a cavity 17 formed therein and opening [though] through the top of the base 16. A vacuum port 32 is formed in the base 16 to permit a vacuum line to be attached to the base for the purpose of drawing a partial vacuum within the cavity 17. A seal 30, such as an oval-shaped O-ring, is mounted about the upper opening of the cavity 17, as shown.

The paragraph beginning at page 14, line 24 has been amended as follows:

As shown specifically in Figures 5, 6, 7 and 8, the primary and secondary membrane modules 20, 18 are formed partially of a hard polymer HP such as polypropylene, polystyrene or polyethylene and partially of an elastomer EM such as a natural or synthetic rubber or similar material. This dual resin construction may be accomplished by co-molding techniques whereby the first (i.e., hard) resin is shot into the mold and, thereafter, the second (i.e., elastomeric) material is shot into the same [mode] mold so as to become adherent upon or fused with the first (i.e., hard) resin. In this manner the preferred two-material construction described above, can be accomplished in a single mold with minimal manual operation and handling. [Alternativelt] Alternatively, this dual resin construction may be accomplished by a two (2) step "over molding" process which is known in the art of injection molding.

The paragraph beginning at page 15, line 17 has been amended as follows:

The number of secondary membrane modules 18 mounted on each sample port 13 may vary (i.e. from zero upward) depending on the number of analytes to be determined. In this regard, the primary membrane module 20 is typically located on the top of the stack such that the flowing matrix will pass through the membrane 52a of the primary membrane module before passing through the membranes 50b of the secondary membrane module(s) 18. Because different types of membranes 52a, 52b are used to perform different tests, the primary and secondary membrane modules 20, 18 may be color coded or otherwise marked for easy identification of the type of membrane 52a, 52b present hereon. The membrane 52a, 52b or each membrane module 20, 18 is attached (e.g., by heat fusion, adhesive or other acceptable means) to membrane support structure such as a ring, flange or cross-members 50a, 50b formed within each membrane module 20, 18. A central attachment projection 41 extends downwardly from support [corss-members] cross-members 50a, 50b, and such

projection 41 is fused or affixed to the membrane 52a, 52b of that membrane module 18, 20. In this manner, as shown in Figure 9, the center of each membrane 52a, 52b is suspended from the attachment projection 41 and the membrane 52a, 52b is thereby deterred from rupturing or blowing out as the flowable sample is being drawn downwardly through the membrane 52a, 52b. At the same time, however, the membrane will remain substantially unattached to the undersides of the cross-members 50a, 50b and flowable sample is permitted to flow into and occupy a gap 43 which exists between the membrane 52a, 52b and the adjacent cross-members 50a, 50b. This serves to avoid the diminution in effective surface area of the membrane 50a, 50b as would occur if the membranes 52a, 52b were fused or affixed directly to the cross-members 50a, 50b. Such maximization of the effective area of the membrane 52a, 52b will serve to promote rapid flow of filtrate (or sub-filtrate) through each membrane 52a, 52b.

The paragraph beginning at page 16, line 13 has been amended as follows:

The lids 22 are mountable in sealing contact on the rim 20 [or] <u>of</u> each primary membrane module 20. A limited air inflow port 24 is formed in each lid 22 to permit a controlled amount of make-up air to pass into each sample-receiving well. These controlled flow ports 24 may comprise holes with segments of tubing inserted therewithin. The size of the lumen of each such segment of tubing may be selected to provide the desired limitation or constriction on the flow of air which enters each sample-receiving well 21. In the particular embodiment shown, which is designed for simultaneous processing of six (6) samples, the inflow rate through each flow port 24 is preferably no greater than 5/6 the capacity of the vacuum pump used to pull negative pressure within the apparatus 10, as described more fully below. In this manner, the provision of these controlled flow ports 24 will ensure that even when the liquid within five (5) of the six (6) sample-receiving wells 21 has been fully drawn through the

membranes 52a, 52b and into the test tubes 15, the amount of make-up air received through those five (5) depleted sample-receiving wells 21 will not be so large as to completely nullify the capability of the vacuum pump to pull adequate negative pressure to draw the remaining liquid through the filter and/or membranes of the remaining sixth sample-receiving well 21.

The paragraph beginning at page 17, line 9 has been amended as follows:

In operation of the first embodiment of the apparatus 10 shown in Figures [4-9] 5-9, a suction or vacuum tube is connected to the vacuum port 32 of the base 16, [an d] and a test tube rack 14 containing clean test tubes 15 is inserted into the cavity 17 of the base 16. Thereafter, the desired primary and secondary membrane modules 20, 18 are mounted in firm sealing engagement on the sample ports 13, and the cover 12 is mounted in firm sealing contact on the base 16. In some applications clamps, rubber bands, screws, or other connector apparatus (not shown) may be applied to hold the cover 12 in firm sealing contact with the seal member 30 of the base 16. In other applications, the cover 12 may be constructed to snap fit or otherwise mount in sealing contact with the seal member 30 without the use of such connector apparatus.

The paragraph beginning at page 17, line 20 has been amended as follows:

After the cover 12 has been mounted on the base 16, quantities of the flowable sample(s) are dispensed into the sample-receiving cavity 21 of each primary membrane module 20, and the lids 22 are applied. Thereafter, the vacuum source is actuated and negative pressure is formed within the cavity 17 of the base 16. This negative pressure within the apparatus 10 causes the quantities of flowable sample(s) dispensed into the sample-receiving cavities 21 to flow downwardly through the first membrane 52a,

through and secondary membrane(s) 52(b), and the resultant filtrate then collects within the test tubes 15.

The paragraph beginning at page 18, line 27 has been amended as follows:

Referring to Figure 10 a second embodiment of the test apparatus 10a generally comprises a) a vacuum base 100, b) a receiving unit 102 having 24 filtrate-receiving wells 109 formed therein, c) plate-type membrane modules 104a, 104b, 104c, each having multiple (e.g. twenty-four(24)) cavities with bottom openings and membranes 108a, 108b, or 108c mounted transversely within such [botom] bottom openings, and d) a cover 106 having 24 individual air inlet ports 115 formed therein.

The paragraph beginning at page 20, line 5 has been amended as follows:

In applications where secondary plate-type membrane modules 104b and/or 104c are used, such secondary membrane modules 104b, 104c will typically have captured secondary analyte(s) (Analytes B, C, etc...) which are to be subsequently released from the membranes 108b, 108c and thereafter concentrated and/or determined. In furtherance of this, a clean receiving unit 102 may be inserted into the cavity 113 of the base 100, and one of the secondary membrane modules 104b or 104c is then positioned on top of the new receiving unit 102 such that each membrane 108b or 108c is positioned over a receiving well 109. A known volume of flush solution or eluant [os] is then placed in the cavity above each membrane 108b or 108c, and the lid 115 is replaced such that it is in sealing contact with the base 100 and the air inlet openings 115 are in alignment with each cavity on the membrane module 104b or 104c. The vacuum source is then reenergized or reconnected to the base to cause a differential pressure to be once again established within the apparatus 10a. In this manner the flush solution or eluant is drawn downwardly through the membranes 108b

or 108c so as to extract or release the captured analyte(s) from the membranes 108b or 108c. An eluant/analyte mixture is thus received within each receiving well, and the above described procedure is repeated to qualitatively or quantitatively determine that analyte in the [elunt/analyte] eluant/analyte mixture with each receiving well.

The paragraph beginning at page 20, line 28 has been amended as follows:

Figure 10a shows another view of the above-described second embodiment of the test apparatus 10a(mod) wherein modified plate-type membrane modules 104a', 104b', 104c' have been incorporated. Each of these modified plate-type membrane modules 104a', 104b', 104c' are formed of two (2) materials--a hard polymer HP and an elastomer EM. Specific examples of the preferred hard polymer HP and elastomer EM are referred to above in relation to the first embodiment (Figures 8-9). As [shopwn] shown, an annulus or ring of elastomer EM is formed about the underside of each membrane cavity, so as to abut with the wall of the membrane [cavitiies] cavities of the module 104b', 104c' positioned [therbelow] therebelow. In this manner, the elastomer EM serves to form a substantially air tight seal between adjacent membrane modules 104a' 104b', 104c'. Also, elastomer EM pads 119 are formed on the underside of the lid 106, around each air inlet port 115, and such pads 119 abut against the upper surface of the membrane module 104a', 104b', 104c' positioned [therbelow] therebelow to form a discreet, substantially air tight seal therebetween. This effectively isolates each sample flowpath, and prevents escape or leakage of air pressure which could interrupt the desired pressure [diferential] differential used to propel the sample through the membranes 108a', 108b', 108c'.

The paragraph beginning at page 21, line 22 has been amended as follows:

Figure 11 shows a third embodiment of a test apparatus [10c] 10b which comprises a) a vacuum base 150 having a cavity 176 formed therein, b) a receiving unit 152 having a plurality of receiving wells 174 formed therein, c) a support member 154 having a plurality of apertures 172 formed therein, d) plate-type membrane modules 156a, 156b, and [166c] 156c, each having a plurality of cavities 171a, 171b, 171c with open bottoms and membranes 170a, 170b, 170c disposed transversely over the open bottom of each cavity 171a, 171b, 171c, e) a sample receiving unit 158 having a plurality of sample receiving wells 178 formed therein, and f) a lid 160 which may be placed in sealing contact on top of the sample receiving unit and which may have a plurality of limited air inlet openings (not shown) of the type described above with respect to the first and second embodiments (see item nos. 24 on Fig. 5a and 115 on Fig.10). These components may be assembled in a stacked array, as shown. Each component is provided with a spring loaded, pivoting, latch member 162 which is configured to engage and latch with a notch 164 in the component positioned immediately therebelow.

The paragraph beginning at page 22, line 7 has been amended as follows:

In routine operation, the receiving unit 152 is inserted into the cavity 176 of the base 150, and the support member 154 is mounted in the base such that it is in sealing engagement with the o-ring 153 which surrounds the top opening of the base cavity 176 and each aperture 172 is positioned over a receiving well 174. The membrane modules 156a, 156b, 156c are stacked upon the support unit 152 such that each cavity 171a, 171b, [171, c] 171c and its membrane 170a, 170b, 170c are in alignment over an aperture 172 of the support member 154. The latches 162 of the bottom membrane module 156c are engaged with the notches 164 formed in the support the support member 152, and the latches 162 of the upper membrane modules 156a, 156b are engaged with the notches 164 of the neighboring membrane modules 156b, 156c

positioned therebeneath. The sample receiving unit 158 is mounted on the upper-most membrane module 156a such that each sample reservoir 178 is positioned over top of a cavity 171a, and the latches 164 of the sample receiving unit are engaged with the notches 164 on the upper-most membrane module 156a.

The paragraph beginning at page 22, line 22 has been amended as follows:

Quantities of sample are initially deposited in sample-receiving reservoirs 178 and the lid 160 is mounted in sealing contact on top of the sample receiving unit 158 with the latches of the lid 160 in engagement [with] with the notches 164 of the sample receiving unit 158. Thereafter, a source of negative pressure is connected to a port (not shown) formed in the base 150 so as to create negative pressure within the cavity 113 of the base [100] 150. This negative pressure causes each sample to be drawn downwardly through the membranes 170a, 170b and 170c positioned under that sample reservoir 178, and the resultant filtrate to be received in the particular receiving well 174 positioned under those particular membranes. In this manner, this third embodiment of the test apparatus 10b may be used to simultaneously process a plurality (e.g., 24 or 48 separate samples).

The paragraph beginning at page 23, line 19 has been amended as follows:

In applications such as that shown in Figure 11, where secondary plate-type membrane modules 156b and/or 156c are used, such secondary membrane modules 156b, 156c will typically have captured secondary analyte(s) (Analytes B, C, [etc...] etc.) which are to be subsequently released from the membranes 170b, 170c and thereafter concentrated and/or determined. In furtherance of this, a clean receiving unit 152 may be inserted into the cavity 176 of the base 150, and one of the secondary membrane modules 156b or 156c is then positioned on top of the new receiving unit

[1152] 152 such that each membrane 170b or 170c is positioned over a receiving well 174. A known volume of flush solution or eluant is then placed in the cavity 171b or 171c above each membrane 170b or 170c, and the lid 160 is replaced such that it is latched to the notches in the membrane module in use 156b or 156c and in sealing contact with the support member 154. The vacuum source is then re-energized or reconnected to the base 150 to cause a differential pressure to be once again established within the apparatus 10b. In this manner the flush solution or eluant is drawn downwardly through the membranes 170b or 170c so as to extract or release the captured analyte(s) from the membranes 170b or 170c. An eluant/analyte mixture is thus received within each receiving well 174, and the above described procedure is repeated to qualitatively or quantitatively determine that analyte in the eluant/analyte mixture within each receiving well 174.

The paragraph beginning at page 24, line 20 has been amended as follows:

Each membrane module 198a, 198b has a plurality of individual sample passage channels 210 formed therein. A membrane 216 is disposed transversely within each sample passage channel 210. Membrane support cross-members 214, such as those described hereabove with respect to the first embodiment (see item nos. 50a, 50b and 41 of Figures 7-9) may optionally be formed within the sample passage channels 210 to support [ant] and deter tearing or rupture of the membranes 216.

The paragraph beginning at page 25, line 4 has been amended as follows:

Figures 13 and 13a shows a modified "top loaded" membrane module 198a' which comprises a housing 220 having a plurality of cylindrical bosses formed downwardly therein such that the wall 221 of each cylindrical boss defines a sample passage channel 224. Each channel 224 has a membrane support floor 240 formed

transversely therein. A filtrate-flow opening 242 is formed through each membrane support floor 240, and a plurality of raised membrane mounting surfaces 244 are formed on the upper surface of each membrane support [flor] floor 240. Disc shaped membranes 228 are placed flat upon the membrane mounting surfaces 224, and o-rings or seals 230 are then passed downwardly into each channel 224 and are disposed in contact with the wall of the channel 224, on top of and in contact with the periphery of each membrane 228. Sealing ring members 232 are then inserted downwardly into each channel 224 and are affixed to the wall of the channel 224 to compress the o-rings or seals 230 and to thereby hold the membranes 228 in captured, fixed position between the o-rings or seals 230 and the underlying membrane support floor 240. The areas between the raised membrane mounting surfaces 244 provide spaces through which filtrate which passes downwardly through each membrane 228 may drain through filtrate flow openings 242.

The paragraph beginning at page 27, line 15 has been amended as follows:

Figure 16 shows a self-contained combination base unit 510 a which is useable with several different embodiments of the test apparatus, such as the second 10a and fifth 10d embodiments described above. This combination base unit 510a comprises a housing 511 having a cavity 304' and all of the same elements as the self contained negative pressure base unit 300 shown in Figures 14a and 14b, but additionally including a vacuum station 512 which is designed to provide negative pressure to the [teast] test apparatus 500 shown in Figures 15a-15e. In this manner, a vacuum connection nipple 514 is formed in the vacuum station, and is insertable into a corresponding vacuum connection fitting (not shown) on the base 500 of the test apparatus 10d. Shoulders 516 are configured to hold the test apparatus 10d on the vacuum station 516, when in use. An internal check valve or cap is used to close off

the vacuum connection nipple 514 when the test apparatus 10d is not mounted thereon.

The paragraph beginning at page 27, line 29 has been amended as follows:

Figure 17 shows a sixth embodiment of the test apparatus of the present invention. This sixth embodiment comprises a dipstick 700 having a handle 702, a first (i.e., outer) membrane 704 and a second (i.e., inner) membrane 706. The second membrane 706 is substantially surrounded and enclosed by the first membrane 704 such that only filtrate which has passed through the first membrane 704 will come into contact with the second membrane 706. The first (i.e., outer) membrane is typically a micro-porous membrane which serves to prevent particles or large molecules which exceed a certain molecular weight from passing therethrough. Examples of molecular weight cut-off membranes which may be useable as the first membrane 704 include the [Sartorious™] SARTORIUS™ 1000MW cut off, 3000MW cut off, or 5000MW cut-off, as specified in [the table of Appendix III] TABLE III. The second (i.e., inner) membrane is typically an indicator membrane which is impregnated with or which bears an indicator substance, such as a dye, which will undergo some perceptible change (e.g., a color change) when contacted by a certain analyte or a predetermined concentration of a certain analyte. The second membrane 706 may be adapted for a) qualitative determination of a particular analyte (e.g., the second membrane 56 undergoes a single color change occurs in the presence of a certain analyte irrespective of the concentration in which that analyte is present; b) semi-qualitative determination of a certain analyte (e.g., the second membrane undergoes a single color change only if contacted by a certain analyte which is present at or above a predetermined threshold concentration, or c) quantitative determination of the concentration of a particular analyte (e.g., the second membrane 56 undergoes a scaled color change such that the

shade or color of the second membrane is indicative of the concentration at which the analyte is present.

The paragraph beginning at page 29, line 5 has been amended as follows:

[The table of Appendix I] TABLE I sets forth a number of test kits/assay methods of the present invention, and provides specific information as to the analyte(s), membrane(s), reagent(s) and detection method(s) used in each such test kit/assay method. In [the table of Appendix I] TABLE I, each horizontal row sets forth a particular test kit/method of the present invention. The columns of each horizontal row are, from left to right, as follows:

The paragraph beginning at page 30, line 3 has been amended as follows:

[The table of Appendix II] TABLE II is a key to the acronyms used to designate the various analytes, membranes, reagents and detection methods in [the table of Appendix I] TABLE I.

The paragraph beginning at page 30, line 6 has been amended as follows:

[Appendix III] TABLE III provides a list of commercially available membranes which correspond to the acronyms used to refer to the membranes in [Appendix I] TABLE I. [Appendix IV] TABLE IV is a table listing algorithms which are useable in conjunction with certain test kit & methods of the present invention to predict or discern certain factors such as shelf life, presence of contaminants, potential for oxidative degradation, etc., as described more particularly herebelow with respect to certain assays which are of predictive value.

The paragraph beginning at page 31, line 1 has been amended as follows:

A test kit/method for determining the amount of free fatty acids in oils and oil components either qualitatively or quantitatively. The oils or oil components may be present in a matrix such as a food, personal care product, cosmetic or other complex matrix. This example is performed in accordance with row 1 of [the table of Appendix I] TABLE I.

The paragraph beginning at page 31, line 29 has been amended as follows:

A test kit/method for determining the amount of free fatty acids in oils and oil components in food, personal care, cosmetics and other matrices which contains the following reagents for analyzing liquids undiluted or diluted in reagents based in solvents, solvent mixtures, or water or water/solvent mixtures. This example is performed in accordance with Row 1 of [the table of Appendix I] TABLE I.

The paragraph beginning at page 32, line 4 has been amended as follows:

A. The oil or oil containing extract is dissolved or disbursed in a diluent (e.g., methanol, isopropanol, hexane or combinations thereof) with or without protectants, and may be processed through a membrane if needed, in accordance with row 1 of [the taboe of Appendix I.] TABLE I.

The paragraph beginning at page 32, line 28 has been amended as follows:

A test kit/method for determining the amount of free fatty acids in oils and oil components in food, personal care, cosmetics and other matrices. The test kit contains the following reagents for analyzing liquids undiluted or diluted, and utilizes a single or

stacked membrane preparation of the matrix to remove particles, protein, or other interferants (e.g., metals). This example is performed in accordance with row 1 of [the table of Appendix I] TABLE I.

The paragraph beginning at page 33, line 9 has been amended as follows:

C. The filtrate which passes through the first membrane is then passed through a second membrane such as a metal capturing membrane (e.g., an imino-diacetic acid membrane (IDA) as referred to in [Appendix IV] TABLE IV), if necessary, to remove additional compounds which would bind the substrate sensitive to acidity or to bind inorganic acids as to contribute background acidity levels.

The paragraph beginning at page 34, line 22 has been amended as follows:

A semi-quantitative, one-vial test kit/method for determining the amount of free fatty acids in oils and oil components in food, personal care, cosmetics and other matrices. The test kit contains the following reagents for analyzing liquids, undiluted or diluted. This example is carried out in accordance with row 1 of [the table of Appendix I] TABLE I.

The paragraph beginning at page 35, line 25 has been amended as follows:

A test kit for determining whether a sample of olive oil qualifies as "extra virgin", "virgin" or "virgin corrente" based on the concentration of free fatty acids present therein, or for determining whether aged oils are acceptable for human consumption, or for pre-testing of olives to select those olives which will provide the highest quality oil. The test kit contains the reagents and membranes (if membranes are needed) as

specified herebelow. This example is in accordance with row 1 of [the table of Appendix I] TABLE I.

The paragraph beginning at page 37, line 6 has been amended as follows:

A test kit for qualitatively determining the amount of free fatty acids in oils and oil components in foods in combination with a polyphenol test which together determines a) oil quality (e.g., extra virgin, virgin, virgin corriente as described in Example #6 above and b) long term stability based on polyphenol content (the higher the polyphenol concentration the longer the stability). This example is in accordance with row 11 [on the table of Appendix I] of TABLE I.

The paragraph beginning at page 37, line 12 has been amended as follows:

A. A sample of the oil or oil containing extracts is dissolved or mixed in a preparation reagent such as isopropanol, with or without protectants. and processed through the membranes shown on row 11 of [the table of Appendix I] TABLE I.

The paragraph beginning at page 38, line 23 has been amended as follows:

A test kit for determining the amount of lipid peroxides and free fatty acids in oils and oil components either qualitatively or quantitatively in food, personal care, cosmetics and other matrices which contains the following reagents for analyzing liquids undiluted or diluted. This example may be performed in accordance with either row 2 or row 3 of [the table of Appendix I] TABLE I.

The paragraph beginning at page 38, line 28 has been amended as follows:

A. A sample of the oil or oil containing extracts is dissolved or mixed in a preparation reagent such as isopropanol, with or without protectants. This sample may be processed through membranes in accordance with rows 2 or 3 of [the table of Appendix I] TABLE I.

The paragraph beginning at page 40, line 5 has been amended as follows:

A test kit for determining the amount of lipid peroxides and free fatty acids in oils and oil components either qualitatively or quantitatively in food, personal care, cosmetics and other matrices which contains the following reagents for analyzing liquids, undiluted or diluted. This example is carried out in accordance with rows 2 and 3 [on the table of Appendix I] of TABLE I.

The paragraph beginning at page 40, line 10 has been amended as follows:

A. A sample of the oil or oil containing extracts is dissolved or mixed in a preparation reagent such as isopropanol, with or without protectants. This sample may be [prcessed] processed through membranes in accordance with rows 2 or 3 of [the table of Appendix I] TABLE I.

The paragraph beginning at page 41, line 14 has been amended as follows:

A test kit for qualitative or semi-quantitative determination of lipid peroxides and free fatty acids in oils and/or oil components of food, personal care, cosmetics and other matrices which contains the following reagents for analyzing liquids, undiluted or diluted. The test kit contains the reagents and membranes set forth herebelow and in rows 2 and 3 [on the table of Appendix I] of TABLE I.

The paragraph beginning at page 41, line 18 has been amended as follows:

A. A sample of the oil or oil containing extracts is dissolved or mixed in a preparation reagent such as isopropanol, with or without protectants. This sample is then processed through membranes in accordance with rows 2 or 3 of [the table of Appendix I] TABLE I. Such membrane processing may be performed using a test apparatus of the present invention, as described above.

The paragraph beginning at page 42, line 24 has been amended as follows:

A test kit for utilizing a novel chemical test to qualitatively or quantitatively determine lipid peroxides and free fatty acids in oils or oil components of foods, personal care products, cosmetics and other matrices. The test kit includes the reagents and membranes specified below and in row 3 of [the table of Appendix I] TABLE I.

The paragraph beginning at page 42, line 28 has been amended as follows:

A. A sample of the oil or oil containing extracts is dissolved or mixed in a preparation reagent such as isopropanol, with or without protectants. This sample may or may not be processed through a membrane, in accordance with row 3 of [the table of Appendix I] TABLE I. If performed, such membrane processing may be carried out using a test apparatus of the present invention, as described above.

The paragraph beginning at page 43, line 27 has been amended as follows:

A test kit for semi-quantitative determination of lipid peroxides and free fatty acids in oils or oil components of a food, personal care product, cosmetic or other

matrix, using a color wheel. The test kit includes the reagents and membranes (if necessary) described herebelow and in rows 2 or 3 of [the table of Appendix I] TABLE I. This test is particularly useful for analyzing liquids, undiluted or diluted, and may be used to classify samples of olive oil (i.e., extra virgin, virgin, virgin corriente) or to sub-categorize samples of olive oil within a particular class based on expected shelf life.

The paragraph beginning at page 44, line 5 has been amended as follows:

A. A sample of the oil or oil containing extracts is dissolved or mixed in a preparation reagent such as isopropanol, with or without protectants. This sample may or may not be processed through a membrane, in accordance with row 3 of [the table of Appendix I] TABLE I. If performed, such membrane processing may be carried out using a test apparatus of the present invention, as described above.

The paragraph beginning at page 45, line 11 has been amended as follows:

A test kit for qualitative or quantitative determination of lipid peroxides and free fatty acids oils or oil components of a food, personal care product, cosmetic or other matrix, using a spectrophotometer. The test kit includes the reagents and membranes (if necessary) described herebelow and in rows 2 or 3 of [the table of Appendix I] TABLE I. This test is particularly useful for analyzing liquids, undiluted or diluted, and may be used to classify samples of olive oil (i.e., extra virgin, virgin, virgin corriente) or to sub-categorize samples of olive oil within a particular class based on expected shelf life.

The paragraph beginning at page 45, line 19 has been amended as follows:

A. A sample of the oil or oil containing extracts is dissolved or mixed in a preparation reagent such as isopropanol, with or without protectants. This sample may or may not be processed through a membrane, in accordance with row 3 of [the table of Appendix I] TABLE I. If performed, such membrane processing may be carried out using a test apparatus of the present invention, as described above.

The paragraph beginning at page 47, line 6 has been amended as follows:

A test kit for qualitatively determining the amount of free fatty acids and LPO in oils and oil components in foods, in combination with a potrphenol test which together determines if the olive oil has been adulterated and is aged. This test is performed in accordance with row 30 of [the table of Appendix I] TABLE I and the test kit includes the reagents and membranes described below and in row 30 of [Appendx I] TABLE I.

The paragraph beginning at page 47, line 12 has been amended as follows:

A. A sample of the oil or oil containing extracts is dissolved or mixed in a preparation reagent such as isopropanol, with or without protectants[.], and processed through the membranes shown on row 30 of [the table of Appendix I] TABLE I.

The Appendices I-IV have been deleted, and the material contained therein has been added as the tables of the drawings, as Figures 18A-18I and 19-21.

APPENDIX SETTING FORTH MARKED-UP COPIES OF AMENDED CLAIMS

The following claims have been amended as follows:

1. (Amended) An apparatus for non-electrophoretic determination of the presence of at least one analyte in [each of n] at least one flowable [samples] sample, said apparatus comprising:

a housing having a cavity formed therein;

[n] at least one filtrate-receiving [vessels] vessel positioned within the cavity of said housing, the filtrate-receiving vessel having an open end;

[n membrane components, each of said membrane components being positioned in association with one of said filtrate-receiving vessels] at least one membrane component positioned over the open end of the at least one filtrate-receiving vessel;

[n] at least one sample-receiving [wells] well, each [of said] sample-receiving [wells] well being positioned in association with one of said membrane components such that sample placed within a particular sample receiving well [may be caused to filter] is filtered through the associated membrane component, and a filtrate which emerges from that membrane component will be received within the associated filtrate-receiving vessel;

a lid for sealing each of said [sample] filtrate receiving vessels and said cavity of said housing, the lid having at least one sample port bounded by an edge extending from the surface of the lid away from the cavity, the edge is structured to retain the at least one membrane component; and

a differential pressure source to cause a pressure differential between each of said sample-receiving wells and each of said filtrate-receiving vessels, said pressure differential being operative to drive each sample through the associated membrane component and the resultant filtrate into the associated filtrate-receiving vessel.

4. (Amended) The apparatus of Claim 2 further comprising:

[n] at least one air-inlet [openings] opening formed in said apparatus, [one of said] the air inlet openings being associated with each one of said sample-receiving wells, such that when a particular sample-receiving well becomes empty air will be drawn through the associated air inlet opening.

5. (Amended) The apparatus of Claim 1 wherein the differential pressure source comprises a pump which is integral of the [test] apparatus.

7. (Amended) The apparatus of Claim 1 wherein at least [some] one of said membrane components have portions formed of a first hard material, and portions of a second elastomeric material, the portions formed of said elastomeric material being at locations which abut against neighboring components of the apparatus to provide substantially air tight sealing therebetween.

67. (Amended) The apparatus according to Claim 1 wherein at least [some] one of the membrane [modules] components are configured so as to nest within one another when stacked, thereby ensuring proper alignment of the membrane [modules] components to allow sample to flow through each sample flow channel.

The following claims have been added:

68. (New) An apparatus for non-electrophoretic determination of the presence of at least one analyte in at least one flowable sample, said apparatus comprising:

a base having a cavity formed therein;

at least one filtrate receiving vessel disposed in the cavity of the base;

a cover sealed over the cavity of the base, the cover comprises at least one sample port disposed over the at least one filtrate receiving vessel to permit filtrate from a sample

to flow through the sample port into the filtrate receiving vessel, the at least one sample port surrounded by a rim extending from the cover away from the at least one filtrate receiving vessel; and

at least one membrane module disposed over the rim surrounding the at least one sample port of the cover, the at least one membrane module having a receiving cavity for receiving a sample to be filtered, and a filter for filtering the sample.

69. (New) The apparatus of Claim 68 further comprising a lid disposed on each of the receiving cavities of the at least one membrane module.

70. (New) The apparatus of claim 69 wherein the lid comprises an aperture for air flow.

71. (New) The apparatus of claim 68 further comprising a port within the base to facilitate a decrease in pressure within the cavity of the base.

72. (New) The apparatus of claim 68 further comprising at least one membrane module nested in the at least one membrane module disposed over the rim surrounding the at least one sample port.

73. (New) The apparatus of claim 72 wherein the nested membrane modules are interlockingly engaged with each other.

74. (New) The apparatus of claim 68 wherein the receiving cavity of the at least one membrane module comprises a plurality of concentric rings of a hard material and an elastomeric material.

75. (New) The apparatus of claim 68 wherein the filter of the at least one membrane module is circumscribed by a ring of an elastomeric material, the ring of elastomeric

material is circumscribed by a ring of hard material, and the ring of hard material is circumscribed by a second ring of elastomeric material.

76. (New) The apparatus of claim 75 wherein the ring of hard material slopes toward the filtrate receiving vessel from the outer perimeter of the ring of hard material to the inner perimeter of the ring of hard material.

77. (New) The apparatus of claim 75 further comprising at least one slot disposed in the ring of hard material and at least one connecting member engageable with a slot disposed on the ring of hard material of another membrane module.

78. (New) An apparatus for non-electrophoretic determination of the presence of at least one analyte in at least one flowable sample, said apparatus comprising:

a base having a cavity formed therein;

at least one filtrate receiving vessel disposed in the cavity of the base;

a cover sealed over the cavity of the base, the cover comprises at least one sample port disposed over the at least one filtrate receiving vessel to permit filtrate from a sample to flow through the sample port into the filtrate receiving vessel;

at least one membrane module disposed over the at least one sample port of the cover, the at least one membrane module having a receiving cavity for receiving a sample to be filtered, and a filter for filtering the sample, wherein the receiving cavity of the at least one membrane module comprises a plurality of concentric rings of a hard material and an elastomeric material; and

a second membrane module nested in the at least one membrane module disposed over the at least one sample port.